

# Update on Vulnerability Assessment

Chronic Diseases: MI and Asthma

**Feb 23<sup>rd</sup>, 2015**  
**DHMH Baltimore**

# Recap of Exposure Metric

- ▶ Extreme Temperature Thresholds ( $ETT_{95}$ )
  - ▶ 95<sup>th</sup> percentile of the daily Tmax value for the county during 1960-1989 period (for each month).
- ▶ Extreme temperature events:
  - ▶ When daily Tmax value exceed the  $ETT_{95}$  value.

The background features abstract, overlapping green geometric shapes, primarily triangles and polygons, in various shades of green, creating a modern, layered effect.

# Extreme Temperature Events and Myocardial Infraction (2000-2012)

# MI Hospitalizations by County and Year

County	Year													
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
Baltimore City	1924	1928	2012	1943	1683	1575	1366	1332	1389	1395	1293	1299	1410	20585
Prince George's	1020	1083	1094	1152	993	1005	857	834	873	844	989	811	844	12421
Washington	404	450	385	363	362	352	304	302	313	310	283	311	320	4463
Wicomico	250	229	227	247	245	179	203	236	214	223	206	198	177	2838
Maryland (Total)	12763	12934	12820	12808	11250	10748	9788	9292	9428	9396	9242	8963	9103	138750

# Odds Ratios for MI and ETT<sub>95</sub> exceedance in Summer

County	OR	95% CI
Maryland	1.11	1.05 – 1.17
Baltimore City	1.43	1.16 – 1.75
Prince George's	1.06	0.90 – 1.24
Washington	0.96	0.71 – 1.30
Wicomico	1.00	0.74 – 1.35

**Vulnerability Assessment: Not all counties in MD are equal**

# Odds Ratios for MI and ETT<sub>95</sub> exceedance by Season (all of Maryland)

Season	OR	95% CI
Winter (Dec-Feb)	0.99	0.94 – 1.04
Spring (Mar-May)	1.04	0.99 – 1.10
Summer (Jun-Aug)	1.11	1.05 – 1.17
Fall (Sep-Nov)	0.95	0.88 – 1.02

**Vulnerability Assessment: Timing of extreme heat events matter!!**

# Odds Ratios for MI and ETT<sub>95</sub> exceedance in Summer by Demographic Characteristic

Characteristic		OR	95% CI
Race*	White	1.09	1.02 – 1.16
	Black	1.27	1.12 – 1.44
Gender	Male	1.12	1.04 – 1.20
	Female	1.09	1.00 – 1.19
Age Group	25-64	1.10	1.01 – 1.20
	65+	1.10	1.01 – 1.20

\*Sample size too small for estimates of 'Hispanic' or 'Other' race categories

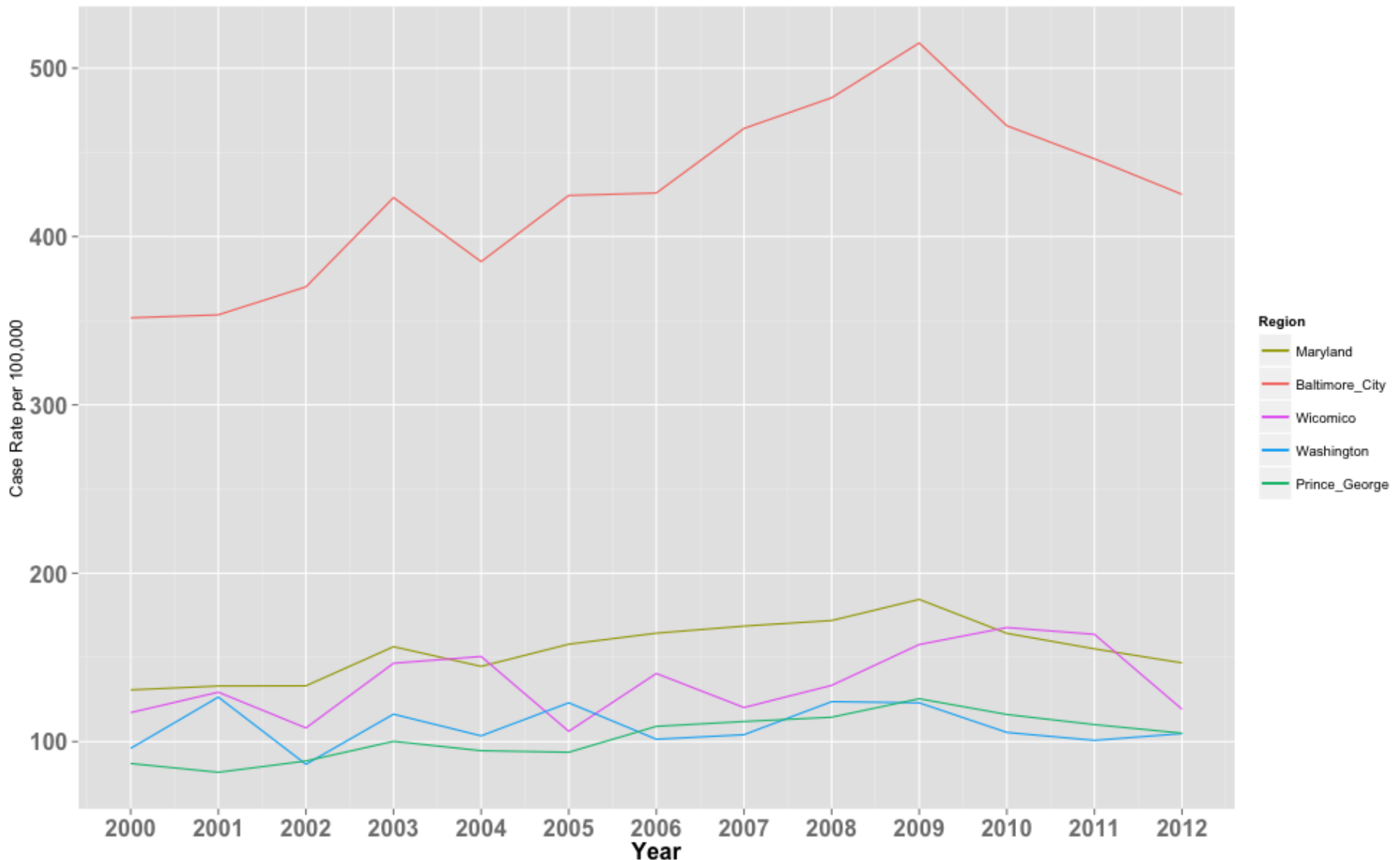
**Vulnerability Assessment: Not all subgroups are equally affected**

The background features abstract, overlapping green geometric shapes, primarily triangles and polygons, in various shades of green, creating a modern and dynamic visual effect.

# Extreme Temperature Events and Asthma (2000-2012)



# Annual Asthma Case Rate (per 100k) from 2000 to 2012



# Extreme Temperature Events and Asthma by County

Location	ETTMAXQ95 OR	ETTMAXQ95 95% CI
All of Maryland	1.03	(1.00, 1.07)
Baltimore City	1.10	(1.02, 1.19)
Prince Georges County	1.02	(0.93, 1.11)
Washington County	1.23	(0.97, 1.55)
Wilcomico County	0.92	(0.73, 1.15)

# Extreme temperature events (ETT<sub>95</sub> exceedance) and Asthma by season

Winter\_TmaxQ95



1.05 [ 0.99 , 1.11 ]

Spring\_TmaxQ95



1.00 [ 0.94 , 1.06 ]

Summer\_TmaxQ95

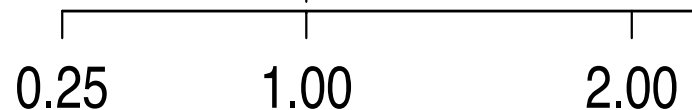


1.22 [ 1.14 , 1.31 ]

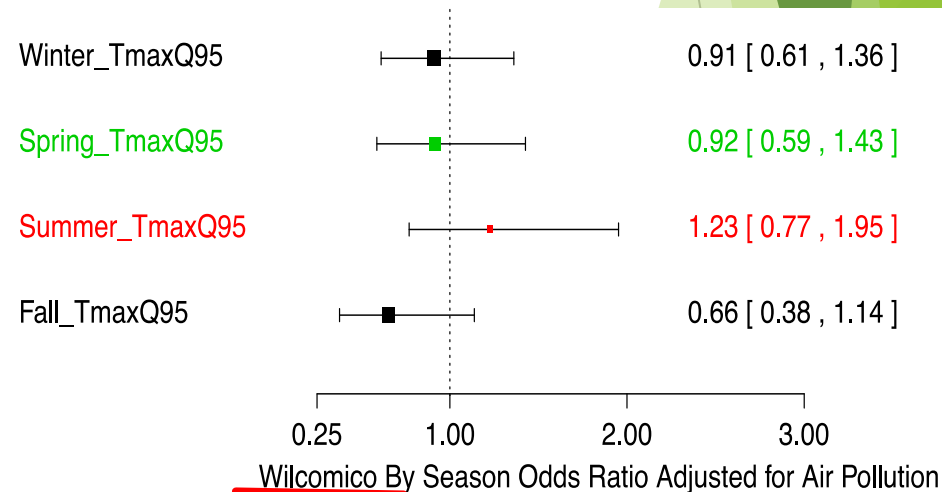
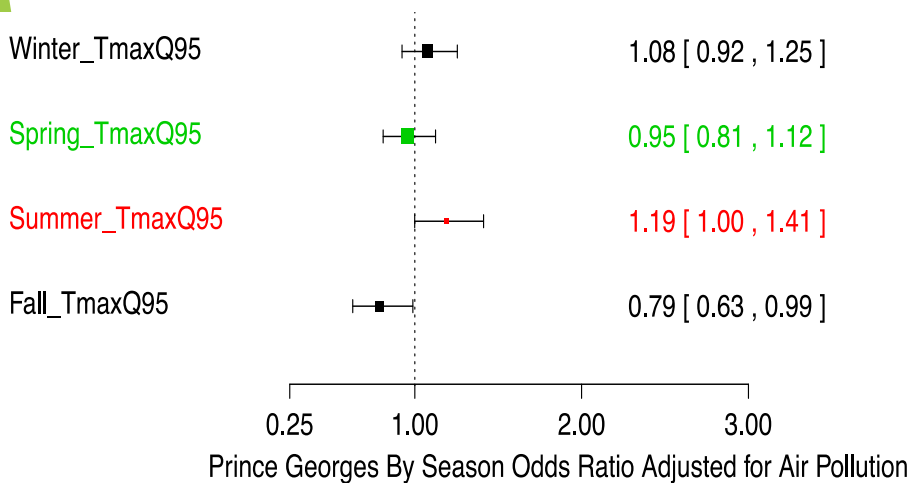
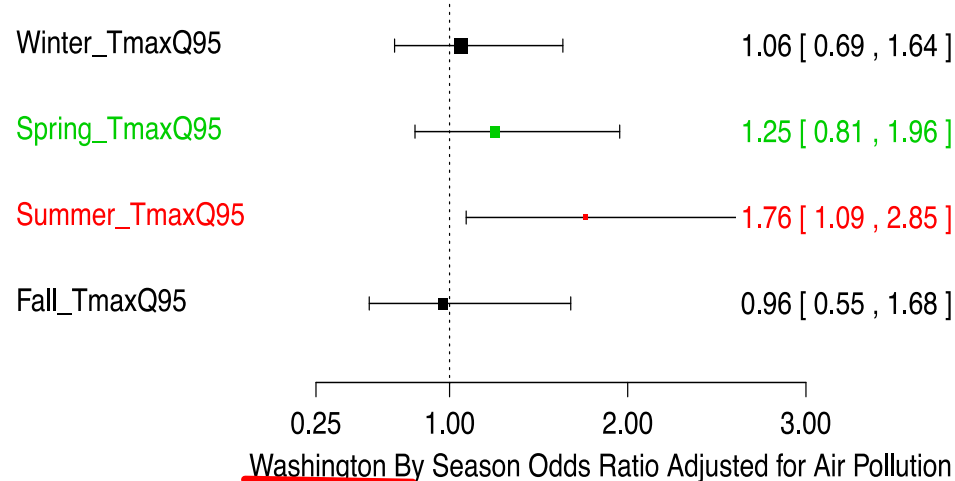
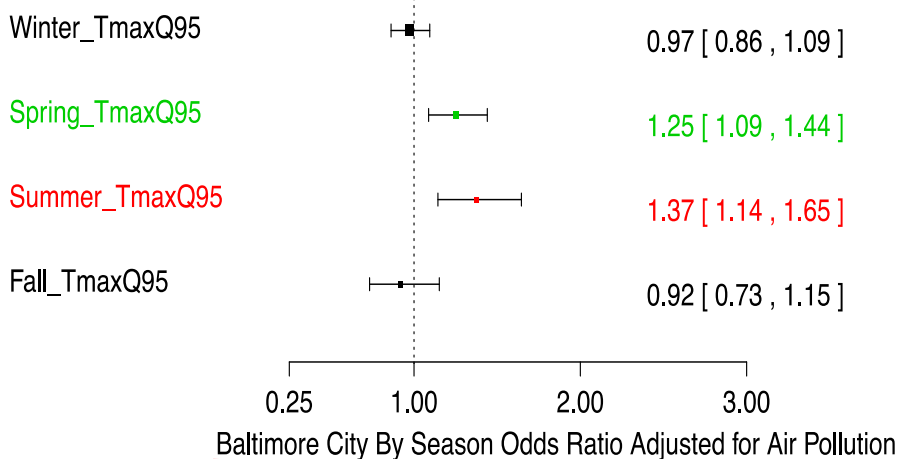
Fall\_TmaxQ95



0.88 [ 0.81 , 0.95 ]



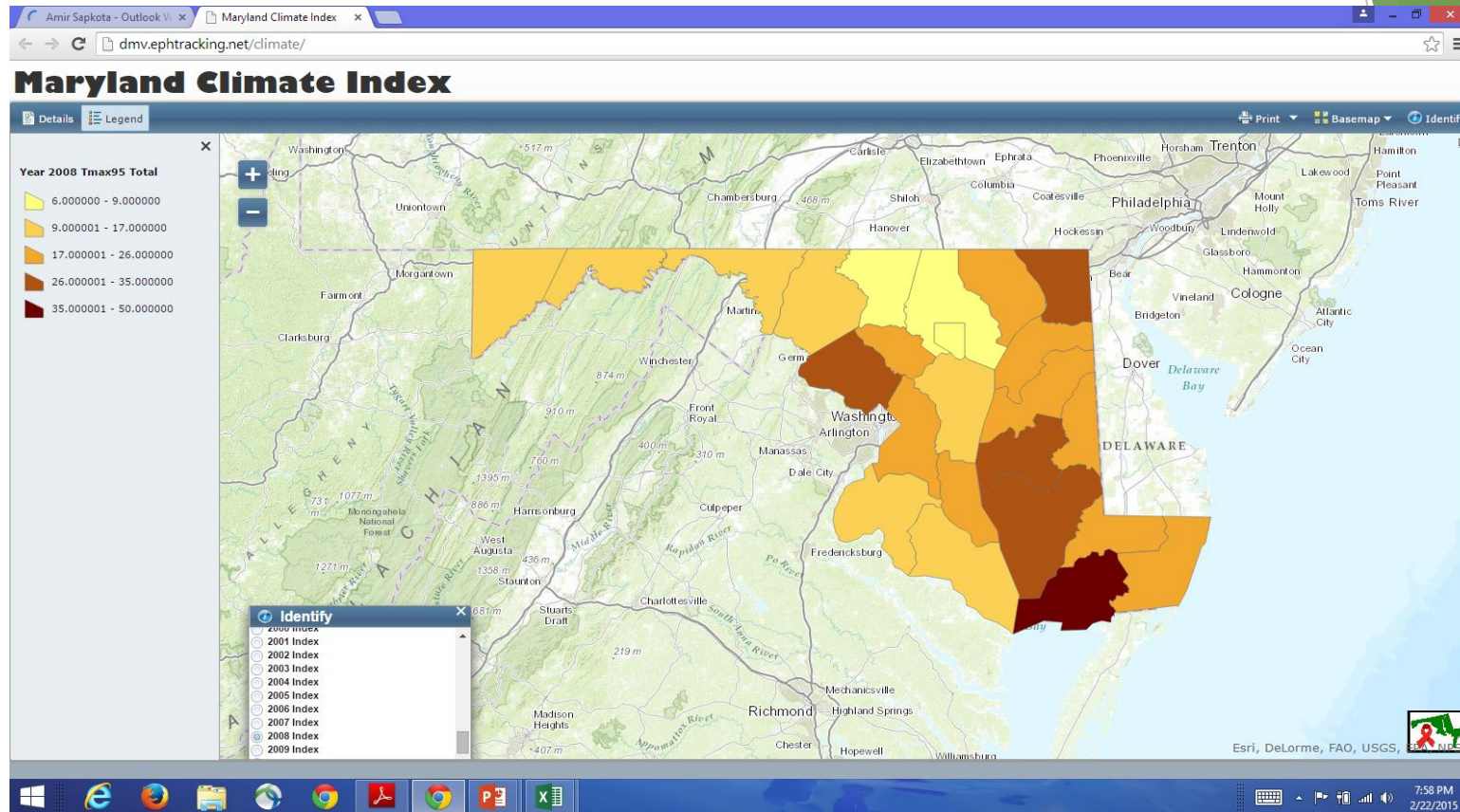
# Extreme temperature events and Asthma by County and Season



# Extreme temperature events and Asthma by Race and Season

Race	Season											
	Winter			Spring			Summer			Fall		
All	0.99	0.94	1.04	1.05	0.99	1.10	1.11	1.05	1.17	0.95	0.88	1.02
Black	0.93	0.83	1.05	1.18	1.04	1.33	1.27	1.12	1.44	0.90	0.76	1.07
White	0.97	0.92	1.03	0.99	0.93	1.05	1.14	1.07	1.21	0.91	0.84	1.00

# Specific Products



Data display through EHPN portal

- Historical extreme temp/precip events
- Projected extreme temp/precip events
- **Disease projection (ongoing)**

# Some thoughts on Intervention

- ▶ Applying knowledge of vulnerability assessment
  - ▶ Examples: Salmonellosis worsens with extreme precipitation, and to a lesser extent with extreme temperature. This is particularly true to coastal counties (Baltimore City, Wicomico, Prince Georges).  
Campylobacteriosis → extreme precipitation only
  - ▶ MI associated with extreme temperature is of particular issue in Baltimore city. African Americans in Summer month.
  - ▶ Extreme temp and asthma, particularly during summer months.